

REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
APPLICATION FOR A PATENT

AND ACKNOWLEDGEMENT OF RECEIPT
(SECTION 30(1) - REGULATION 22)

The grant of a patent is hereby requested by the undermentioned application on the basis of the present application filed in duplicate

OFFICIAL APPLICATION NO.

21	01	9711077
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(i) OUR REFERENCE

429111

(ii) FULL NAME(S) OF APPLICANT(S)

71	SERIPRINT MARKETING (PTY) LIMITED
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(iii) ADDRESS(ES) OF APPLICANT(S)

Kosmos	0261	Pretoria
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(iv) TITLE OF INVENTION

54	APPARATUS FOR PRINTING
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(v) ~~PRIORITY IS CLAIMED AS SET OUT ON THE ACCOMPANYING FORM P.2.~~

~~(vi) THIS APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO:~~

21	01	
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~~(vii) THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND
BASED ON APPLICATION NO.~~

21	01	
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(viii) THIS APPLICATION IS ACCOMPANIED BY

- ☒ 1. ~~A single copy of a provisional or two copies of a complete~~
specification of pages.
- ☒ 2. Drawings of ..4.. sheets.
- ☒ 3. Publication particulars and abstract (form P.8. in duplicate).
- ☒ 4. A copy of Figure ..1.. of the drawings (if any) for the abstract.
- ☐ 5. Assignment of invention.
- ☐ 6. Certified priority document(s) (State number).
- ☐ 7. Translation of the priority document(s).
- ☐ 8. An assignment of priority rights.
- ☒ 9. A copy of the form P.2. and the specification
~~of S.A. Patent Application No.~~
- ☐ 10. A declaration and power of attorney on form P.3.
- ☐ 11. Request for ante-dating on form P.4.
- ☐ 12. Request for classification on form P.9.
- ☐ 13.

21	01	
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(ix) ADDRESS FOR SERVICE:

IAN MORRISON FORSTER & CO P O BOX 2004 MOUNT EDGECOMBE 4300

Dated this ...3... day of ...December 1997

IAN MORRISON FORSTER & CO
APPLICANT'S PATENT ATTORNEYS

RECEIVED 1997-12-10 OFFICIAL DATE STAMP REGISTRAR OF PATENTS

IAN MORRISON FORSTER & CO

FORM P.7
(In duplicate)

REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
COMPLETE SPECIFICATION
(Section 30 (1) - Regulation 28)

OFFICIAL APPLICATION NO.

21

01

9711077

LODGING DATE

22

1997 -12- 10

OUR REFERENCE

429111

INTERNATIONAL CLASSIFICATION

51

G03G; G03F

FULL NAME(S) OF APPLICANT(S)

71

SERIPRINT MARKETING (PTY) LIMITED

FULL NAME(S) OF INVENTOR(S)

72

ANTHONY WILLIAM GOODYER

TITLE OF INVENTION

54

APPARATUS FOR PRINTING

FIELD OF THE INVENTION

This invention relates to apparatus for printing or copying and in particular to full colour half tone digital copyprinters.

BACKGROUND OF THE INVENTION

The conventional copyprinter generally includes a tray or a sorter for receiving the prints and this often results in ink-set-off which can be a serious disadvantage.

One manner of overcoming this disadvantage would be to install a UV treatment to the copies as they emerged from the copyprinter but this, or any other treatment process would introduce a hazard to the user of the printer and it is an object of the present invention to prevent or at least greatly minimise this disadvantage.

THE INVENTION

According to the invention a copyprinter includes a chamber for directly receiving copies requiring a drying or other treatment process, the chamber including UV and/or other treatment unit/s, for example IP lamps or the like.

In a preferred form of the invention the chamber is below the copyprinter and is provided with a conveyor for the copies which fall by gravity thereonto, the conveyor being adapted to transport the copies through the chamber.

In a refinement of the invention, the apparatus includes a receiver located at the exit of a copyprinter, the receiver being adapted to receive copies from the copyprinter in a first position thereof, and to move to a second position in which the copy is deposited on a conveyor or the like for the copy to be transported through the chamber.

The receiver may be articulated and moves from a first receiving position to a second angled position in which a copy slides therefrom on to the conveyor. Thus, the problems associated with falling sheets of paper or other media is greatly reduced in a very simple manner.

The receiver may include a sensor which, when a copy enters the receiver, actuates a motor which drives the receiver to its second angular position.

This arrangement obviates any problems associated with falling paper and other media bearing the copies.

The chamber may comprise the cupboard which is often provided in copyprinter cabinets for storage of paper or the like.

The apparatus of the invention provides an ideal medium for full colour half tone printing for paper and other substrates, including plastic materials which have, as far as the Applicants are aware, not been possible before with conventional printing apparatus.

In a refinement of the invention an endless conveyor is provided through the chamber, the trailing roller of which is hollow and is perforated, and is adapted to receive a vacuum if required, with means under the roller to break the vacuum or otherwise release paper or other substrate after it has been rotated through more than 90°. This enables the copies to be collected in the correct rather than the upside down order if the copies merely fell by gravity from the end of the conveyor. This is particularly important for transferring prints for subsequent colour printing steps.

The trailing roller may include a manifold having its leading edge offset from the vertical diameter of the roller, the manifold being adapted to shut off the perforations and being connected to the source of vacuum.

According still further to the invention, if space permits, a further treatment chamber may be provided, which could easily be arranged in the conventional cupboard under a copyprinter. This chamber may be used for any of a variety of purposes such as coating, for perforating the paper or other substrate, sequential numbering of pages, folding and many other functions.

In certain case, problems of registration occur particularly at high copying speeds and it is a further aspect of the invention to provide a pair of formations spaced apart and adapted

releaseably to receive the opposite edges of a substrate for printing, means to advance the formations through the copyprinter, and a station where the formations release the substrate.

The pair of formations may take the form of endless belts driven by a pair of drums or sprockets or sprocket-driven drums. The belts may be folded over to contain the edges of the substrate, and means are provided either to open or close the folded belts as required. Thus, for example, the belts may be in a normally closed position and fingers, posts or the like provided at the feed and release stations for the substrate to be introduced and released respectively.

Suitable idler rollers may be provided at predetermined positions basically to serve as means for maintaining the nip of the belts.

It will be appreciated that other formations may be used instead of the belts, such as, for example, driven rails or belts with pins for engaging edge holes of the substrate.

EMBODIMENTS OF THE INVENTION

Embodiments of the invention are described below with reference to the accompanying drawings in which:

Figure 1 is a sectional side view of a simple form of apparatus according to the invention;

Figure 2 is a detailed isometric view of the trailing roller of the conveyor of Figure 1;

Figure 3 is a side view of a refinement of the invention;

Figure 4 is a side view in diagrammatic form of a modification of apparatus according to the invention;

Figure 5 is a diagrammatic partial plan view of a pair of folded belts;

Figure 6 is a diagrammatic partial section of the arrangement;

and

Figure 7 is a diagrammatic plan view of the feed station for the substrate.

In Figures 1 and 2 a conventional copyprinter 10 includes an endless conveyor 12 running on a leading and a trailing roller 14,16. UV and IR lamps 18,20 are located above the conveyor

so that the prints issuing from the printer are carried in the direction of the arrow 22 past the lamps and then fall by gravity as directed by arrow 24.

The trailing roller 16 may, having regard to Figure 2, be hollow and be provided with perforations 30. A manifold 32 is connected to a source of vacuum as indicated by arrow 36. Thus, as the copies pass over the roller, the vacuum holds them until they have turned through more than 90° when they encounter the manifold and therefore become detached from the perforations.

The leading edge 38 of the manifold is tapered to guide the edges of the copies over the manifold so that they then drop under gravity right-side up.

A further chamber 40 is provided which is served by a conveyor 42 which transports the copies thereinto and, as mentioned above, a variety of functions may be carried out.

Alternatively, if further printing passes are required, the copies are removed in the correct sequence for reintroduction into the copier. In the event that the further passes involve a new primary colour screen it will be appreciated that the correct order is essential as the previous screen will have stretched during the multiples printings and the copies therefore should be introduced to the next pass in the same.

Referring now to Figure 3, copies exit from the copyprinter into or on to a receiver 20 which is hinged at 22 and is driven by means of a fractional horse power motor 24 through a suitable belt 26 and drum 28. A sensor 30 is responsive to the entry of a copy and a circuit is provided (not shown) which activates the motor causing the receiver to move to an angular position as shown in dotted line where the leading edge of the copy contracts the surface of the conveyor 12 and then slides on to the conveyor.

Referring now to Figure 4, a printer includes a housing 10 which contains a printing drum 32.

Transport of substrate (for example paper sheets 34) for printing is effected by a pair of folded over belts 36 which grip the opposite edges of the substrate, and they are driven by a pair of sprockets driving drums 38,40. These are provided with pins 42 which engage in

corresponding holes in the belts 36 to provided a degree of accuracy of synchronous timing of the belt movement in relation to the rotation of the printing drum 32 and to prevent slippage.

Fingers 44,46 are provided at the feed station 48 and the release station 50 respectively, the fingers being located for insertion into the folded over belts to open them sufficiently for the opposite edges of the sheets of the paper to be located in the folds at the feed station and to release the edges at the release station.

A pressure idler roller 52 is provided to form a nip between it and the printing drum 32 and idler rollers 56,58 are provided for supporting of the belts at desired locations.

A UV heater element 60 is provided for rapid curing and drying of the ink and a jogger 62 collects the printed sheets.

Turning to Figure 5, the pair of folded over belts 36 are shown with the opposite edges 70 of a substrate 72 held therein.

In Figure 6, finger 44 is shown on the sprocket drum 38 and it is arranged to open the folds according to the required distance apart of the sheets being fed.

In Figure 7 the feed station 48 has an abutment 78 for the sheets of paper which provides an accurate feed while the side knockers 82 serve to align the sheets for accurate insertion into the folds of the belts.

CLAIMS

1.

A copyprinter including a chamber for directly receiving copies requiring a drying or other treatment process, the chamber including UV and/or other treatment unit/s, for example IP lamps or the like.

2.

The copyprinter according to claim 1 in which the chamber is below the copyprinter and is provided with a conveyor for the copies which fall by gravity thereonto, the conveyor being adapted to transport the copies through the chamber.

3.

The copyprinter according to claim 1 or 2 in which the apparatus includes a receiver located at the exit of a copyprinter, the receiver being adapted to receive copies from the copyprinter in a first position thereof, and to move to a second position in which the copy is deposited on a conveyor or the like for the copy to be transported through the chamber.

4.

The copyprinter according to claim 3 in which the receiver is articulated and moves from a first receiving position to a second angled position in which a copy slides therefrom on to the conveyor.

5.

The copyprinter according to claim 3 or 4 in which the receiver includes a sensor which, when a copy enters the receiver, actuates a motor which drives the receiver to its second angular position.

6.

The copyprinter according to any of the above claims in which the chamber comprises the cupboard which is often provided in copyprinter cabinets for storage of paper or the like.

7.

The copyprinter according to any of the above claims in which an endless conveyor is provided through the chamber, the trailing roller of which is hollow and is perforated, and is adapted to receive a vacuum if required, with means under the roller to break the vacuum or otherwise release paper or other substrate after it has been rotated through more than 90°.

8.

The copyprinter according to claim 7 in which the trailing roller includes a manifold having its leading edge offset from the vertical diameter of the roller, the manifold being adapted to shut off the perforations and being connected to the source of vacuum.

9.

The copyprinter according to any of the above claims in which, if space permits, a further treatment chamber is provided, which is located in the conventional cupboard under a copyprinter.

10.

The copyprinter according to any of the above claims including a pair of formations spaced apart and adapted releasably to receive the opposite edges of a substrate for printing, means to advance the formations through the copyprinter, and a station where the formations release the substrate.

11.

The copyprinter according to claim 10 in which the pair of formations take the form of endless belts driven by a pair of drums or sprockets or sprocket-driven drums.

12.

The copyprinter according to claim 11 in which the belts are folded over to contain the edges of the substrate, and means are provided either to open or close the folded belts as required.

13.

The copyprinter according to claim 12 in which the belts are in a normally closed position and fingers, posts or the like provided at the feed and release stations for the substrate to be introduced and released respectively.

14.

The copyprinter according to any of claims 10 to 13 including suitable idler rollers at predetermined positions to serve as means for maintaining the nip of the belts.

15.

A copyprinter substantially as described with reference to Figure 1, Figures 2 and 3, or Figures 4 to 7.

Dated this 3 day of December 1997


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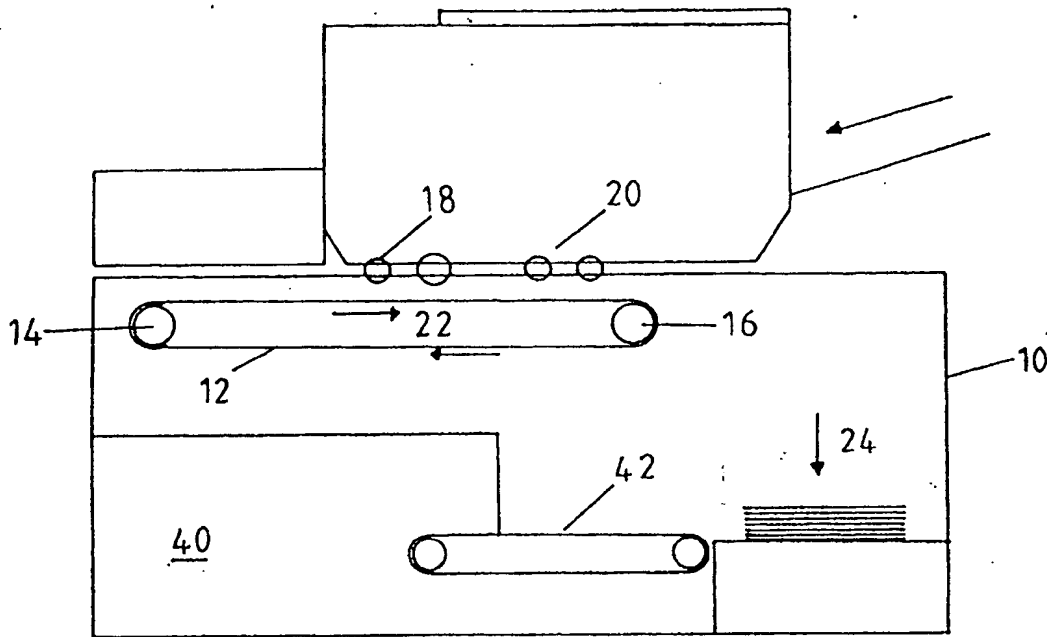


FIGURE 1

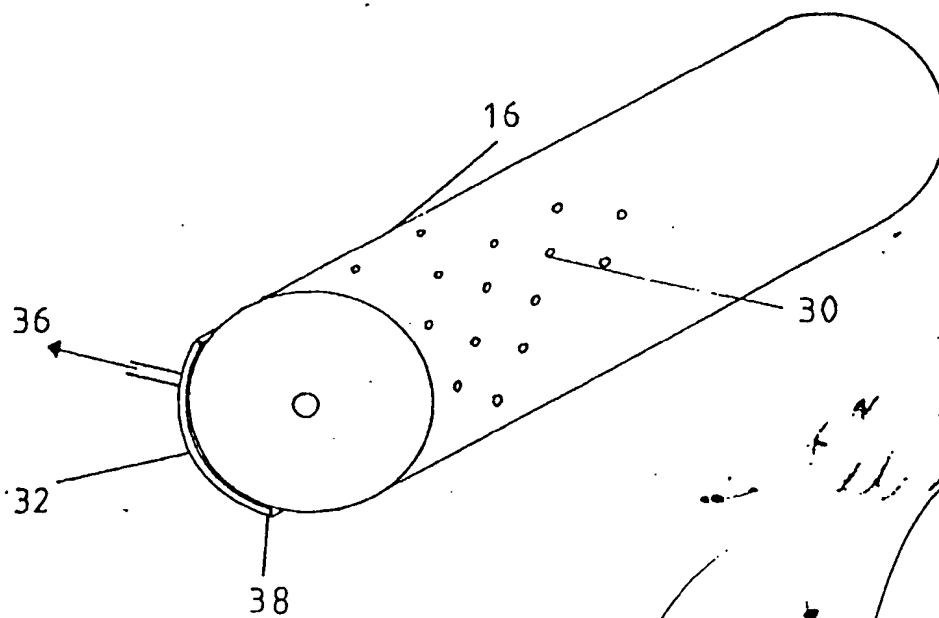


FIGURE 2

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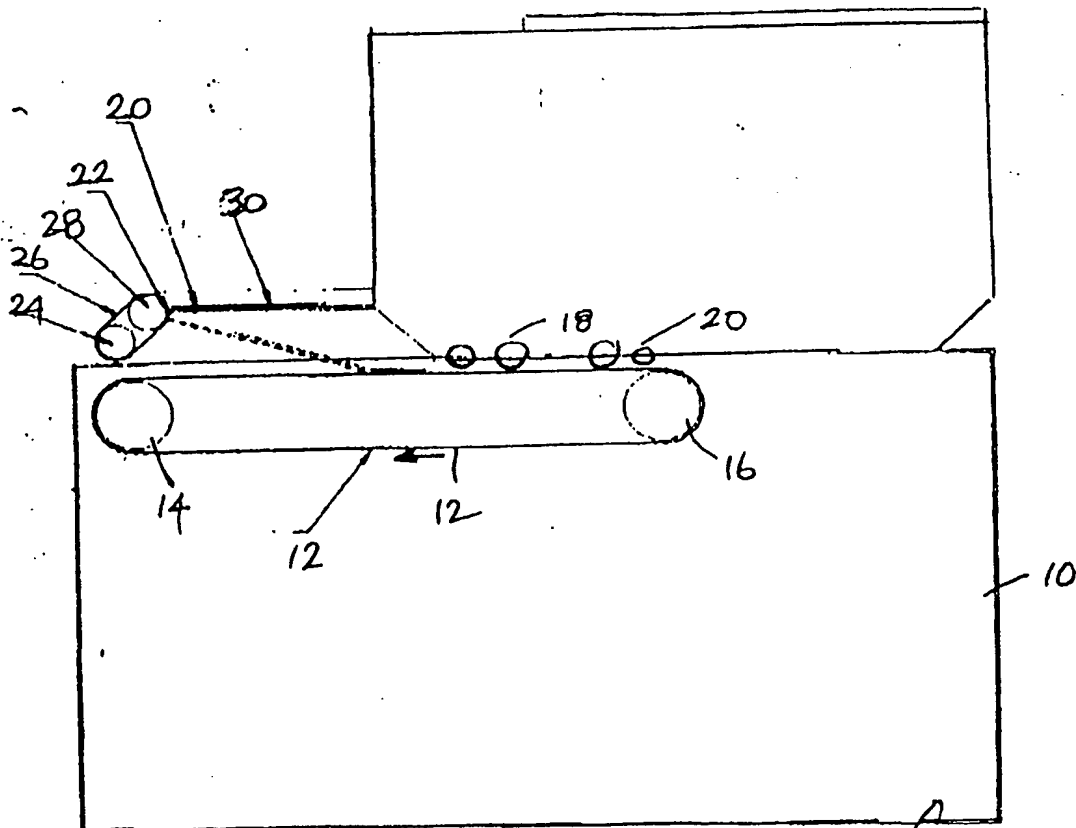
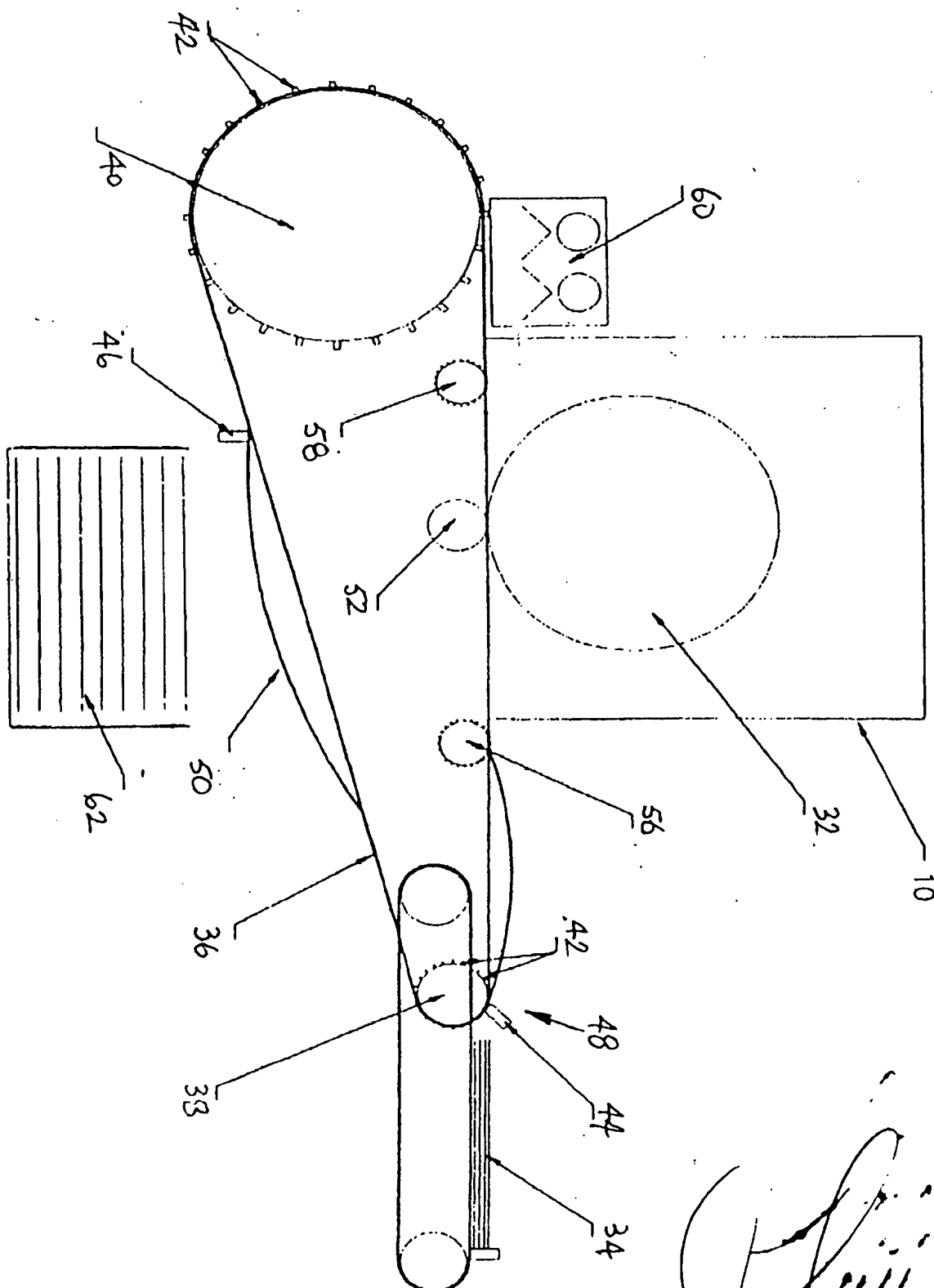


FIGURE 3

[Signature]
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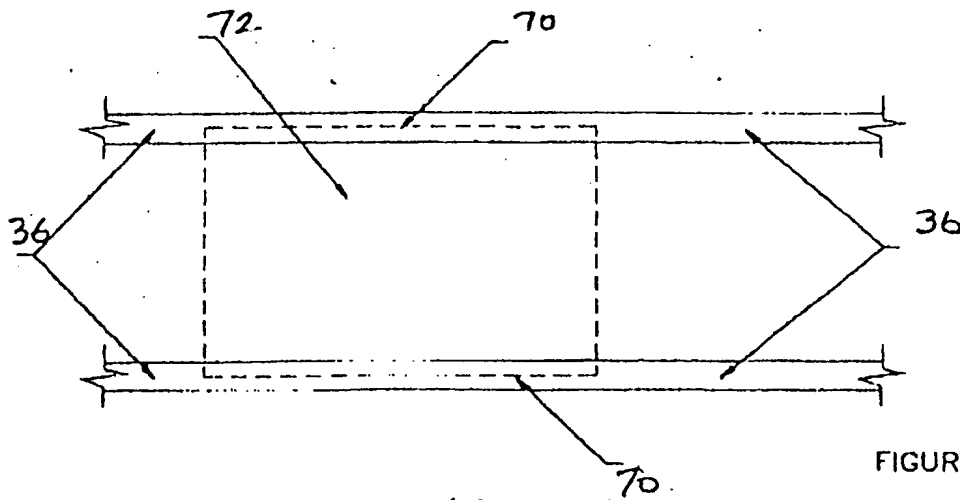


FIGURE 5

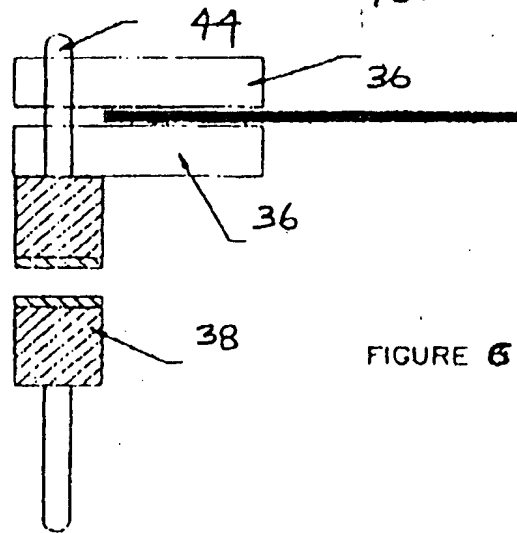


FIGURE 6

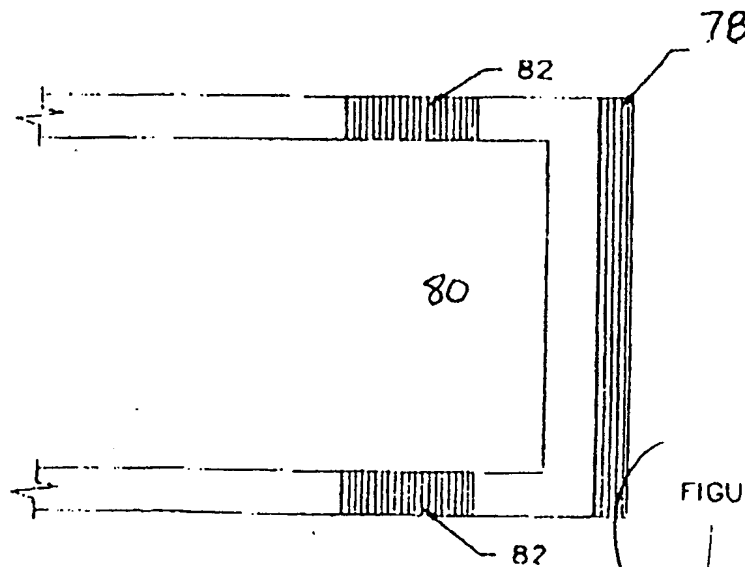


FIGURE 7

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